

Appl. No. 10/071,504  
Amdt. Dated July 11, 2003-07-11  
Reply to Office Action of March 12, 2003

### REMARKS

#### Election/Restriction

The applicant affirms the election to prosecute the invention of Group I, claims 1-17 and 20-22. Accordingly, claims 18 and 19 have been withdrawn as the result of the restriction requirement, however, the applicant retains the right to present claims 18 and 19 in a divisional application.

#### Claims Rejections

##### 35 U.S.C. 112 Rejections

Claims 9, 10, 15 and 16 stand rejected under 35 U.S.C. 112 as being unclear, apparently because they are method claims that depend from assembly claims. The applicant submits that this is in fact acceptable practice and that these claims are not unclear as a result. The claims simply define methods that are practiced using specific assemblies defined in the claims that are referred to. Nonetheless, in order to clarify, each of claims 9, 10, 15 and 16 have been cancelled. New claims 23-34 have been added so as to directly incorporate the subject matter of the referred to claims. No new matter is added and the amendments as made should not be taken as any form of limitation to the scope of the claims before amendment.

It is submitted that the claims as amended comply with 35 U.S.C. 112.

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### 35 U.S.C. 102 Rejection

The Examiner takes the position that claims 1-3, 5 and 11 are unpatentable over Harada et al. Reconsideration is respectfully requested for the reasons set out below.

The Examiner is correct that Harada et al discloses a load cell and load detecting apparatus comprising a plate 33 which includes holes 34 in each of its corners. However, the strain gauges SG1-SG8 are not situated on the plate. Instead, as shown in Figs. 1A and 1B and described in column 4, lines 37-58, the eight strain gauges are stuck on a lower surface 18a of the strain occurrence portion 18. The strain occurrence portion 18 is a thin annulus ring forming part of the column elastic body 11. The column elastic body 11 is connected to the plate 33. Plate 33 is fixed to the frame of a hopper. The load cell measures the compressive load applied on the load acting surface 13. The load follows transmission path "p", thereby reaching the strain gauges. (See Fig. 6) (Col.5, lines 64-67).

The present invention functions in a much different way. Rather than measuring the compressive load applied on the load cell, the load sensor assembly of the present invention measures the strain acting on the plate 10. In order to directly detect the strain of the plate 10, the strain gauge must be secured to it. This limitation is set out in claim 1 of the present application, namely that the load sensor comprises "a strain gauge secured to said plate." As discussed above, this is not disclosed in Harada et al., since what the strain gauges are secured to is the annulus of the column elastic body 11. Similarly, claim 11 defines a first uniaxial strain gauge secured to the plate along an axis defined between diagonally opposed holes in the plate and that a second uniaxial strain gauge be secured along an axis defined by the remaining two holes of the plate. This is not disclosed in Harada et al.

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Accordingly, the applicant respectfully submits that claims 1 and 11 are allowable over Harada et al.

Claims 2, 3 and 5 are dependent on claim 1 and the comments made in relation to claim 1 are reiterated.

### 35 U.S.C. 103 Rejections

The Examiner takes the position that claims 4, 6-8, 12-14, 17 and 20-22 are unpatentable in view of Harada et al in light of Kistler, Suzuki and Barnett et al.

Claim 4 stands rejected under 35 U.S.C. 103 (a) as being unpatentable over Harada et al in view of Kistler. This claim also depends on claim 1 and the comments made above in relation to that claim are reiterated. Nevertheless, Applicant comments further as follows.

The Examiner rejected claim 4 on the basis that it would have been obvious to modify Harada et al according to the teachings of Kistler for the purpose of, measuring the deflection of a centered beam member. However, this is not related to what is claimed in claim 4. Claim 4 defines that the strain gauge is mounted on the plate so as to be substantially centered thereon.

Kistler discloses a strain sensor formed from a square plate, preferably by machining. In its finished form as illustrated in Fig. 1, the strain sensor is no longer square. It has mounting pads 20, 22, 26, 28 at the corners that are connected to the remainder of the strain sensor by flexures 30, 32, 34, 36. Four interconnecting legs 40, 42, 44 46 form the remainder of the strain sensor. A pair of strain gauges 66, 68 are connected on opposite sides of the interconnecting leg or beam 40. While centered on the beam 40, the strain

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gauges are not substantially centered on the plate itself. The configuration of flexure hinges 54, 56, 60 and the beam 40 is such that beam 40 will deflect in response to isotropic strains in the structure to which the sensor is mounted.

The load cell taught by Harada et al measures a compressive load applied on the load acting surface 13. The load follows transmission path "p", thereby reaching the strain gauges. The strain gauges in Harada et al are already positioned in the correct position in order to read the compressive load. The teachings of Kistler would not be relevant to the invention of Harada as they could not be incorporated into the design and would serve no purpose.

The applicant respectfully submits that it would not be obvious to modify Harada et al according to the teachings of Kistler. Reconsideration of the rejection of claim 4 is therefore respectfully requested.

Claims 6-8 and 12-14 stand rejected under 35 U.S.C. 103 (a) as being unpatentable over Harada et al in view of Suzuki et al. These claims depend on claims 1 and 11 and the comments made above in relation to those claims are reiterated.

Claims 17 and 20-22 stand rejected under 35 U.S.C. 103 (a) as being unpatentable over Harada et al in view of Barnett et al. Claim 17 depends from claims 1 or 11 and the comments made above in relation to those claims are reiterated.

Claim 20 has been cancelled. Claim 21 has been amended to incorporate the limitations of the base claim 20. Claim 22 is dependent on claim 21. Claim 21 contains the following limitation:

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"...at least four strain sensing elements rigidly associated with a mounting plate, and wherein a first pair of said elements are oriented on said mounting plate along a principal strain axis thereof, and a second pair of said elements are oriented on said mounting plate perpendicular to said principal strain axis..."

As discussed above, Harada et al. discloses a load cell and load detecting apparatus comprising a plate 33 which includes holes 34 in each of its corners, however, the strain gauges SG1-SG8 are not situated on the plate, nor are they oriented as set out in the above-noted limitation. Accordingly, the modification of Harada pursuant to the teachings of Barnett et al. would not lead to the claimed invention of claims 21 and 22.

#### CONCLUSION

The Applicant therefore submits that the claims patentably distinguish over the prior art and respectfully requests that a timely Notice of Allowance be issued in this case.

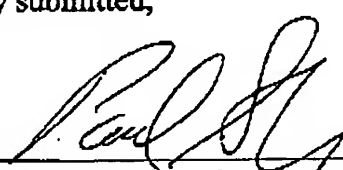
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Respectfully submitted,

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